ABSTRACT

THESIS: Cardiorespiratory Fitness Trends in The BALL ST Cohort

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It is known that cardiometabolic risk factors have trended unfavorably over the last 50 years. Currently, little is known how CRF (cardiorespiratory fitness), a strong determinant of future risk for CVD (cardiovascular disease) and cancer mortality, is trending. Purpose: To analyze trends in CRF and cardiometabolic risk factors over the last 50 years in a population of apparently healthy adult men and women. Methods: Participants were 3,560 apparently healthy adults (1,874 men and 1,686 women) from the Ball State Adult fitness Longitudinal Lifestyle STudy (BALL ST) cohort that performed maximal cardiopulmonary exercise testing between 1971-2019. Participants were self-referred either to the community-based exercise program or were research subjects in clinical exercise physiology related studies. Trends in CRF and cardiometabolic risk factors were assessed using univariate analysis of variance. Results: CRF declined ($P<0.05$) from the 1970s to the 2000s with a slight increase ($P<0.05$) from the 2000s to the 2010s for both men and women. As CRF decreased age, BMI and waist circumference increased ($P<0.05$) reciprocally. However, age and sex-adjusted CRF level, determined by Fitness Registry and the Importance of Exercise: A National Data Base (FRIEND), also trended downward. Conclusion: Over the past 50 years CRF decreased while age, BMI and waist circumference increased in a cohort of apparently healthy men and women self-referred to an exercise program. Measured CRF has strong prognostic ability for all-cause and disease-specific mortality outcomes and should be used to help improve

the effectiveness of patient risk assessment and clinical decisions to better treat and inform patients so they are able to improve their CRF to ultimately improve their health.